

June 6, 2001

TO Mayor and Members of City Council

FROM: Mark T. Ashworth, Acting Manager of the Internal Audit Division

SUBJECT: Audit of the Stormwater Management Utility (SMU)

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Document #200000467

MOTION, dated 03/01/2000, by Councilmember Portune that the City Manager initiate an audit of the operation for Stormwater Management Utility, its capital projects and operations commencing with the period beginning with the transition of the City's Stormwater Management Utility Division into the Metropolitan Sewer District. Such an audit should review without limitation:

1. All capital expenditures and whether SMU funds have been expended on capital projects which should have been funded through regular MSD capital expenditures in accordance with the 1968 Agreement and its amendments;
2. Personal expense and operations including whether SMU employees are performing non-city SMU related tasks;
3. Such other items as the city's auditor deems appropriate.

I further move that immediate steps be taken to relocate the employees of the Stormwater Maintenance Utility under one umbrella pending the completion of the audit, in order to provide more fluent service to the rate paying residents of the City of Cincinnati.

# **Stormwater Management Utility Audit Report**

## **Executive Summary**

### **Background**

By agreement in 1968, the City and Hamilton County created the Metropolitan Sewer District (MSD) to be managed by the City's Department of Sewers. MSD was responsible for the maintenance and operations of all public sanitary and combined sewers. It was precluded from activities involving solely storm water drainage. Responding to a need for an effective stormwater program within the city, City Council created the Stormwater Management Utility (SMU) in 1985. Ten years later, City Council incorporated SMU into the Sewers Department as a division. Many service functions were combined.

### **SMU Capital Expenses**

Prior to 1995, MSD expended funds on capital projects designed to relieve Water-in-Basement (WIB) problems caused by the back up of water from combined sewers into basements during a rain event. As WIBs often constitute a problem with the capacity of combined sewers, according to the 1968 Agreement, correction of this problem should be the responsibility of MSD.<sup>1</sup> However, recognizing that the question of responsibility may not be clear, by appropriate legislative action City Council and the County Commissioners have agreed to share the costs of correcting certain WIB problems. Council's intent and authority to contribute half the costs of these projects from Stormwater funds are apparent. MSD abandoned two of these projects this year.<sup>2</sup> SMU's share of the costs of the six remaining WIB projects has increased from \$1.2 million, as originally reported to Council, to the range of \$1.8 to \$3.1 million.

Information regarding MSD's Capital Improvements Program (CIP) that was presented to Council was not always consistent with the information presented to the County Commissioners. **Internal Audit recommends that MSD:**

- **Specifically identify in the City's CIP budget those projects that are jointly funded by the City.**
- **Specifically identify in the City's CIP budget MSD's share of costs of projects jointly funded by the City.**
- **Provide written explanation to the City's Budget Office for (1) the addition of specific projects to the City's CIP list that were not included in the County's CIP list and (2) the elimination of specific projects from the City's CIP list that were included in the County's CIP list.**
- **Provide written explanations or reconciliations for estimated costs for individual projects if those costs vary by +/- 5% between the City's and County's CIP lists.**
- **Submit a copy of its County-approved CIP to the City's Budget Office for the second year of the City's biennial budget.**
- **Ensure consistency between the City and County CIP lists when describing specific projects and assigning priority ranking.**

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<sup>1</sup> WIB problems caused by overland flows entering basements through windows, doorways, or driveway drains were specifically excluded from MSD's responsibility by the 1968 Agreement. Correction of these WIBs is the responsibility of SMU or the homeowner.

<sup>2</sup>(1) Bethesda Hospital closed. When the landowner determines a future use for the property, improvements to that sewer will be reconsidered. (2) Northbend/Harrison/Wardall was determined to be outside Cincinnati corporate limits.

SMU has about \$1 million from current revenue available for stormwater drainage improvements and corrections each year. In 2000, as \$798,000 was earmarked for the Duck Creek project in conjunction with the US Army Corps of Engineers, only \$332,000 of current revenue was available and appropriated for specific projects in the neighborhoods. For 2001, \$905,000 was appropriated. A 1992 report identified 766 capital projects with an estimated cost a decade ago of \$118.6 million. SMU management estimated that only 10 to 15% of these projects have been completed. Costs incurred for specific SMU capital projects prior to 2000 were grouped and accounted for by the year in which they were funded. To improve its management information and reporting ability, in 2000 SMU began tracking costs on a project by project basis. **Internal Audit recommends that SMU recover cost data for specific SMU capital projects from January 1, 1995.**

### **Activities of SMU employees**

SMU employees performed stormwater work within City limits. In addition, some SMU employees performed non-stormwater related work for the Sewer Department. Opportunities exist for effectively and efficiently improving the recording, reporting, and tracking of employees' time. MSD has reimbursed SMU for all billed personnel expenses incurred by SMU employees performing non-stormwater related activities.

**Internal Audit recommends that SMU (1) update the activity codes of its timekeeping system; (2) distribute the updated codes to and train all SMU employees and other Sewer Department employees working on SMU projects; and (3) computerize timekeeping data entry.**

**Internal Audit recommends that (1) Sewers indicate on its intradepartmental billings the SMU activity code for the hours charged and (2) both Sewers and SMU transmit the itemized billing data to the other in an electronic format.**

Implementation of the computerized Storm Sewer and Appurtenance Inspection Program by the Sewers Department will substantially improve the quality and documentation of SMU's present Operations and Maintenance inspection activities. Data generated from the first four months of implementation suggest that the costs required to remedy emergency maintenance and repair conditions for the City's stormwater system may exceed \$23.5 million. However, full implementation and inspection of every stormwater structure will take about five and a half years. **To halve the initial inspection time of the Storm Sewer and Appurtenance Inspection Program and to effect more thorough, current inspection outcomes, Internal Audit recommends that SMU invest approximately \$15,000 in a second set of equipment. Internal Audit also recommends that Sewers management assure the availability of sufficient and trained personnel to operate the equipment at the optimum level.**

## **Background**

By agreement in 1968, the City and Hamilton County created the Metropolitan Sewer District (MSD). The City, through its Department of Sewers (Sewers) agreed to do all things necessary to manage and operate MSD including the maintenance and operation of all sanitary and combined sewers, pumping stations, and treatment plants that were then, or may become part of the sewer district.<sup>3</sup> However, as provided in Section XII, this agreement specifically excluded activities associated with storm water facilities:

Specifically excluded from the scope of this Agreement is the authority and responsibility for design, construction, maintenance, repair and replacement of storm sewer facilities and storm water channelization where those facilities are intended solely for the purpose of storm water drainage, except as in Item 3 of Section XII.

... Specifically excluded from the scope of this Agreement are the design, construction, maintenance, repair and replacement of basins, inlet structures, inlet connections, and other appurtenances used for the purpose of conveying storm waters to combined sewers. These facilities shall be maintained by the appropriate highway departments of the State, County, municipalities, and townships.<sup>4</sup>

Thus, MSD was precluded from activities involving solely storm water drainage, unless and until the storm water entered a combined or sanitary sewer.

In addition, the agreement provided that the City, in managing and operating MSD, agreed to "[r]eview and approve the design and construction of all sanitary sewers, sewage pumping stations and sewage treatment facilities connected either directly or indirectly into the sewerage facilities of the sewer district. The review and approval of storm drainage facilities and water line improvements are specifically excepted from this Agreement."<sup>5</sup> However, when mandated by a governmental agency to separate a combined flow, MSD is responsible for the replacement of both sanitary and stormwater conduits but not for the maintenance of the resulting storm sewers.<sup>6</sup>

In effect, the exclusion of stormwater responsibilities from this agreement highlighted the need for an effective stormwater program within the City.<sup>7</sup> Organizational responsibility for stormwater management was dispersed: stormwater management was a secondary priority in several departments, but not a singular responsibility in any. The infrastructure was aging: 31.1% was more than 100 years old and almost 92% was over 50 years old. Insufficient revenue and basic funding through the general fund limited long-term orientation and planning.

In response, the City created the Stormwater Management Utility (SMU) in 1985.<sup>8</sup> The Stormwater Management Code was established and provided for the effective management and financing of a stormwater system within the City including the establishment and implementation of a master plan for storm drainage and the establishment of reasonable storm drainage service charges.<sup>9</sup> As an enterprise fund, the financing of SMU operations and capital improvements is limited to SMU's revenue streams.

In January 1992, the multi-volume Stormwater/Wastewater Integrated Management (SWIM) report was issued.<sup>10</sup> The SWIM report concluded a three-year, multi-million dollar study committed to developing a stormwater management plan for SMU and a wastewater management plan for MSD.

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<sup>3</sup> Agreement between the City of Cincinnati and the Board of County Commissioners of Hamilton County, dated April 10, 1968, §VIII, Para. 4.

<sup>4</sup> *Ibid.*, §XII, Para. 1 and 2.

<sup>5</sup> *Ibid.*, §VIII, Para. 5.

<sup>6</sup> *Ibid.*, §XII, Para. 3.

<sup>7</sup> City of Cincinnati, Department of Public Works, Division of Engineering, "Stormwater Management Utility Implementation Report," May, 1984.

<sup>8</sup> City of Cincinnati Ord. No. 281-1985.

<sup>9</sup> CMC Chapter 720.

<sup>10</sup> Stormwater/Wastewater Integrated Management, Camp Dresser & McKee, January, 1992.

The objectives of these plans were to define coordinated and integrated improvement needs for each agency, develop short- and long-term plans, and meet agency needs in the most cost-effective manner for the stormwater and wastewater collection and conveyance systems within the City. Pertinent goals of the SWIM plan adopted by each agency included (1) prevent property damage from flooding due to sewer backups; (2) coordinate the operation and construction of the stormwater and wastewater collection systems with all affected agencies in the City and County; and (3) develop a comprehensive drainage and flood-control system for the City.<sup>11</sup>

The proposed management plans for both SMU and MSD identified specific improvements needed to be made. The SWIM report identified 766 stormwater projects at an estimated cost in 1991 dollars of \$118.6 million and an additional 150 projects, valued at \$129.4 million, for increasing the capacity of the combined sewers to convey a 10-year storm event.

Numerous areas of the City where combined sewers are present have over-loading problems caused by insufficient capacity. If the problem is caused by inlet capacity, location, or maintenance, SMU has lead responsibility for correcting the problem. If the problem is related to combined sewers, MSD has lead responsibility for correcting the problem. Solutions for pipe capacity problems in combined sewers may be construction of relief sewers or detention facilities to provide storage for the infrequent storm. These improvements to the combined sewer system are discussed separately from storm sewer drainage projects in the [SWIM] Plan because MSD is responsible for operation and maintenance of the combined sewer system.

...  
The combined sewer system was originally designed with a stormwater conveyance capacity based on the 10-year design storm. When this conveyance capacity is not present, street flooding or sewer backups into basements can occur. As a part of the SWIM Plan, Cincinnati's combined sewers were analyzed to determine their adequacy to convey the 10-year storm... One hundred fifty (150) projects, with a total estimated cost of \$129.4 million, have been identified for increasing the capacity of the combined sewer system to convey a 10-year storm event...<sup>12</sup>

Although the SWIM report was not submitted to Council for approval, both SMU and MSD used the SWIM report, along with other sources of information, as a general inventory of problem locations and proposed improvements. Both the substance and form of the SWIM report addressed the clear and definite separation of mission and management responsibilities between SMU and MSD as of 1992. These distinctions have blurred in subsequent years as the relationship between SMU and MSD has changed. The first major change occurred in 1995 when City Council incorporated SMU into the Department of Sewers as an operating division.<sup>13</sup>

Many activities, critical to the success of each agency, were similar. These activities included routine inspection and cleaning, engineering design, acquisition of easements, and construction. Essentially, only the funding sources, service areas, and focus of the work differed, as well as the requirements specific to storm sewers or to sanitary and combined sewers. In efforts to reduce redundancies, thereby increasing the efficiency of both SMU and MSD, activities of these agencies began to merge. Seeking the benefit of combined or cooperative efforts, the City and County entered into various Memoranda of Understanding (MOU) in recent years. The original MOU, effective April 23, 1995 to April 23, 1996, provided that the management functions of SMU would be merged with the operations of MSD. All SMU/MSD financial operations would be kept completely separate, recognizing the restricted nature of the funding sources for MSD and SMU. Appropriate cost allocations would be made for a portion of the Director's salary and others who may provide services to both parties. In addition, the "City and County

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<sup>11</sup> *Ibid.*, Proposed Stormwater Management Plan, p. 1.

<sup>12</sup> *Ibid.*, p. 97.

<sup>13</sup> City of Cincinnati Ord. No. 452-1994; Cincinnati Administrative Code, Article XIX, §7.

commit to continue to study, discuss, and negotiate all issues pertinent to the advisability of instituting a county-wide stormwater program which may operate in conjunction with MSD..."

The subsequent MOU, effective February 1, 1996 through February 1, 1998, (1) continued the merger of management functions and the commitment to study the feasibility of a county-wide stormwater program, (2) provided that each organization would be charged allowable indirect and direct cost for services provided to the other, and (3) established that 20% of the salary cost of MSD's Director and Deputy Director and 10% of the salary cost of MSD's Superintendent of Administration be charged to SMU. In addition, when identified and approved by both the City and County, any and all combined service functions accomplished by MSD for SMU would be apportioned as appropriate. These terms were repeated in the MOU effective February 1, 1998 to February 1, 2001 and the MOU drafted for the three-year period beginning February 1, 2001. The latest MOU has been signed by the City, but not yet acted upon by the County. The study to determine the feasibility of instituting a county-wide stormwater program began this year.

### **SMU Capital Expenses**

As the operation, maintenance, and construction of storm sewers, storm drains, and stormwater facilities in the City are the responsibility of SMU, SMU's financial resources should be expended to these ends. Storm sewers begin at the grating or opening where storm water enters the structure, through the sewer to the outlet structure where water enters a channel, natural watercourse, or combined sewer (sewer which serves as a sanitary sewer during dry weather plus storm water runoff during a rain event). Responsibility for sanitary and combined sewers is dictated by the terms of the 1968 Agreement between the City and MSD and other memoranda of understanding.<sup>14</sup> Thus, the maintenance, improvement, and extension of all public sanitary and combined sewers are the responsibility of MSD. Questions of responsibility and funding arise when the cause of flooding problems relates to combined sewers that do not have adequate capacity to effectively convey the flow during a rain event.

### **Jointly Funded Projects**

Prior to 1995, MSD expended funds on capital projects that were designed to relieve WIB problems caused by the back up of water from combined sewers into basements during a rain event. As WIBs often constitute a problem with the capacity of combined sewers, according to the 1968 Agreement, correction of this problem should be the responsibility of MSD.<sup>15</sup> However, recognizing that the question of responsibility may not be clear, by appropriate legislative action City Council and the County Commissioners have agreed to share the costs of correcting certain WIB problems.

In 1992, the County adopted a program to reduce improper stormwater connections to the separate sanitary sewer system. MSD would contribute up to \$3,000 per premise for work done under this program.<sup>16</sup> By two separate resolutions,<sup>17</sup> Council approved a total of \$90,000 to pay the homeowners' costs in excess of the approximate difference between MSD's contribution of \$3,000 per premise and total project costs on Wittekind Terrace.

The County took legislative action again on December 13, 1995<sup>18</sup> by adopting a policy of cost sharing with local jurisdictions in which localized basement flooding problems were caused by insufficient capacity of combined sewers. Insufficient capacity was defined as the inability to carry less than the 10-year, 24-hour design storm. The MSD share of the proposed improvements shall be less than 50%. As described below, City Council approved several projects with this cost sharing arrangement.

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<sup>14</sup> CMC §720-5.

<sup>15</sup> WIB problems caused by overland flows entering basements through windows, doorways, or driveway drains were specifically excluded from MSD's responsibility by the 1968 Agreement. Correction of these WIBs is the responsibility of SMU or the homeowner.

<sup>16</sup> Hamilton County Commissioners Minutes, January 2, 1992, Vol. 245, Images 146 - 149.

<sup>17</sup> Resolution R/6-1998, Document #199800253 and Resolution R/9-2000, Document #200000065.

<sup>18</sup> Hamilton County Commissioners Minutes, December 13, 1995, Vol. 260, Images 3592 and 3593.

Local flooding in the Covedale area due to inadequate capacity of existing storm and combined sewers prompted the execution of the Covedale Intergovernmental Flood Control Agreement between the City, the County, and Green Township in 1996. The City, through SMU, agreed to contribute one-half of the cost of this project, not to exceed \$2,292,150. The contract for this project (65x1707) was approved by Council's Ordinance No. 215-1996. \$1 million was earmarked in SMU's 1996 capital budget for this project. \$1.2 of the \$5 million bonds issued by SMU in 1997 was designated for Covedale. Council approved amending the Covedale project contract by increasing the amount contributed by the City and the County by \$260,000 each.<sup>19</sup> This amount was included in SMU's capital budget for 2000. SMU's costs paid to date for the Covedale project are \$909,541.

In response to sewer complaints from residents in the Tweed and Wakefield area in 1998, MSD submitted two identical reports to Council.<sup>20</sup> These reports identified nine WIB projects addressing the improvement of combined sewers if less than half of the project cost is funded by MSD. As indicated in these reports, total costs of these projects were estimated at \$2,684,700 with a 50% contribution from SMU presumed.

One of these projects was outside City limits and was soon eliminated (Samoht Ridge); two projects have been completed (Cedar and Tweed/Wakefield); two are in progress (Toluca and Clearview); two are scheduled to start in future years (Northern and Wardall/Epworth/Hull); and two projects were dropped in 2001.<sup>21</sup> Details regarding these WIB projects and the other joint projects are presented in the chart on the following page.

In addition to identifying these specific projects, MSD was responsible for all relevant activities from scheduling the initial study and design through construction and inspection. SMU's responsibility was limited to paying the interdepartmental bills processed by MSD. SMU's share of the total costs of these projects was estimated at \$1.8 million.<sup>22</sup> Bonds in this amount were issued and sold.<sup>23</sup> A cost of service analysis was performed<sup>24</sup> which provided projections of the operating, non-operating, and capital costs of SMU for the period 1999 through 2003 under various funding options for both a no-growth program and an enhanced operational program. Council increased the ERU (Equivalent Run-off Unit) rate<sup>25</sup> which, in turn, increased the service charges billed and the revenue received by SMU in order to pay the debt service on the bonds issued.

The funding of these projects was intended to have no adverse affect on the amount of funds available for SMU's ongoing capital program. However, at the time the cost of service analysis was performed, major capital investments other than the WIB projects were on SMU's horizon: Duck Creek and Barrier Dam improvements, compliance with NPDES mandates, decline of routine maintenance and remedial repair, and maintenance of the Mill Creek corridor. The potential effects of the costs of these anticipated projects were included in several of the funding options. The analysis found that the current level of routine maintenance and remedial repairs have been in decline in recent years and needed to be significantly increased. In addition, the level of effort possible with existing funding resources was not consistent with the amount and age of the infrastructure already in place or with future needs. The analysis found that the lack of regular revenue increases was a major deficiency in the SMU strategy to date. Even under the scenario of a no-growth operational program, annual rate increases would be needed to fund the contemplated 5-year, \$12.13 million capital program which did not include the joint WIB projects.

The reports submitted to Council by MSD indicated that the identified WIB projects would probably take an average of three to five years to complete, provided that easements were acquired rapidly. The

<sup>19</sup> Document #199900534, approved and filed 3/17/99.

<sup>20</sup> Documents #199801669 and 199801671, dated 8/5/98.

<sup>21</sup> (1) Bethesda Hospital closed. When the landowner determines a future use for the property, improvements to that sewer will be reconsidered. (2) Northbend/Harrison/Wardall was determined to be outside Cincinnati corporate limits.

<sup>22</sup> The reports to Council indicated SMU's share of project costs were estimated at approximately \$1.34 million (1/2 of \$2,684,700). The County's 1998 list of capital improvements for MSD, and amendments to it, indicated SMU's share would be approximately \$1.78 million.

<sup>23</sup> City of Cincinnati Ord. No. 119-1999, Document #199900636.

<sup>24</sup> Cincinnati Stormwater Management Utility Cost of Service Analysis, Water Resource Associates, Inc., 1998.

<sup>25</sup> City of Cincinnati Ord. No. 22-1999, Document #199900140.

reports advised that the projects could go forward to design and construction as soon as the responsible stormwater utility (SMU) approved its portion of the funding. Prior to approving the reports, Council amended them, deleting language referring to prioritization of the projects. The approved reports did not mention that MSD would stagger the initiation of these projects over many years.

Project Location	Initial Est. SMU Cost - City <sup>26</sup> (1/2 Total Cost)	Initial Est. SMU Cost - County <sup>27</sup> (1/2 Total Cost)	Status or Start Date	Current Est. SMU Cost (1/2 Total Cost)	SMU's Costs Paid as of 12/31/2000
<b>Joint Projects:</b>					
1. Wittekind <sup>28</sup>	20,000				90,000
2. Covedale	2,292,150			2,600,000	909,541
<b>WIB Projects:</b>					
1. Bethesda	64,750	79,200	2005 (Eliminated in 2001)	Dropped; the hospital closed.	N/A
2. Toluca Ct.	197,500	243,600	2001	Contract for \$290,250; Current Est \$124,950	
3. Tweed & Wakefield	213,000	369,700	Completed	291,500 to 387,000	126,596
4. Northern Ave.	44,100	77,400	2004	400,000 to 1,300,000 to correct surface flooding problem as well; Current Est for WIB \$158,750	
5. Clearview & Rapid Run	330,000	505,750	2001	650,000 to 1,500,000	
6. Cedar Ave.	192,500	195,150	Completed	Contract for \$296,460; Current Est \$241,000	155,518
7. Wardall & Epworth	87,500	141,752	2002	300,000 to 473,400	
8. Northbend, Harrison & Wardall	63,000	172,200	(Eliminated in 2001)	Not within City	N/A
9. Samouht Ridge	150,000	N/A	N/A	Not within City	N/A
10. Hull & Epworth (combined with Wardall & Epworth above)*			2003	*	
Total Est. WIB Project Costs	1,342,350	1,784,752		1,776,200 to 3,105,460	282,114

To avoid costly arbitrage penalties, the Finance Department routinely describes the intended purposes of capital improvement bonds in general terms rather than identifying the specific, contemplated projects. In the Official Statement for the \$1.8 million bond issue, the intended purpose of the SMU bonds was "for constructing and acquiring improvements to the stormwater system within the City." As of February 28, 2001, \$1,567,385 of the bond proceeds was, in fact, expended or encumbered for "improvements to the stormwater system." To avoid arbitrage penalties, SMU must spend the remaining bond proceeds of at least \$233,000 plus any encumbered amounts for stormwater capital improvements before April 2002. SMU management reported that the requisite amounts would be timely spent.

Of the \$1.5 million of expended bond proceeds, only \$282,114 of this amount was for costs incurred and billed to date by MSD for the WIB projects approved by Council. Whether Council knew that the proceeds of the bonds issued for the eight WIB projects could and would be applied to other stormwater projects is not known.

MSD prepared a similar report, summarizing alternatives to address the WIB projects and recommending almost the same nine WIB projects<sup>29</sup> with a 50% contribution from SMU. The Public Works and Utilities Committee of Council filed this report on 9/10/98.<sup>30</sup> This report, in its argument for permanent solutions to basement backup problems, cited the SWIM report: MSD "is committed to solving the basement backup problems experienced by its customers. To achieve these solutions in 1991 [sic] the MSD developed the

<sup>26</sup> As reported to and approved by City Council.

<sup>27</sup> As reported to and approved by the County Commissioners.

<sup>28</sup> Only the costs associated with the joint SMU/MSD project are presented. SMU has earmarked an additional \$700,000 for stormwater improvements for Wittekind.

<sup>29</sup> Samouht Ridge was eliminated; Hull & Epworth was added.

<sup>30</sup> Document #199801138.



SWIM Report that outlines permanent solutions to combined sewer problems. These permanent solutions were estimated at \$129.4 million dollars [sic] in 1991."<sup>31</sup>

Internal Audit confirmed that the SWIM report was correctly, but selectively, cited by MSD. In addition to the \$129.4 million estimated for improvements to combined sewers, the SWIM report also identified 766 stormwater improvements, which did not involve WIBs, with total estimated costs of \$118.6 million. MSD did not convey this information to Council in its report. Prior to this time and except for the Covedale project, SMU had not assumed costs for correcting WIB problems caused by the incapacity of combined sewers. With this additional financial responsibility, the better practice would have been to advise Council also of the extent and magnitude of backlogged and unfunded stormwater projects.

The other WIB projects that Council approved include:

- the Cedar Avenue project.<sup>32</sup> SMU's costs were not to exceed \$296,460. The project is complete. SMU has paid \$155,518 to date. The current estimate is \$241,200.
- the Toluca Court project.<sup>33</sup> SMU's costs were not to exceed \$290,250. The current estimate is \$124,950.

Internal Audit could not locate a contract nor a City Council resolution or ordinance specifically approving the Tweed & Wakefield project or the expenditure of SMU's funds for it. The Law Department has determined that the City's participation in this project was adequately and lawfully authorized through concurrent but separate actions of the City and the County. The project is complete. SMU's share of the costs is estimated to be about \$291,500. SMU has paid \$126,595 to date for this project.

Council's intent and authority to contribute 50% of the costs of these projects from Stormwater funds are apparent. SMU's share of costs for the six remaining WIB projects have changed in three years from \$1.2 million, as originally reported to Council, to an estimated range of \$1.78 to \$3.1 million. Internal Audit could not locate communication to City Council or to the administration of the abandonment of two approved projects (Bethesda and Northbend/Harrison/Wardall) or the cost variances of the remaining six.

#### Capital Improvement Program (CIP) Inconsistencies

As noted in the chart above, information from MSD to Council was not always consistent with information from MSD to the County Commissioners. The 1968 Agreement provides that three months prior to end of the current fiscal year, the City prepare a capital improvement program (CIP) of sewer construction projects for the year next ensuing and submit it to the County for approval. Internal Audit compared MSD's capital projects as reviewed by the City to those submitted to and approved by the County. Major discrepancies were noted which could not be reconciled.

MSD's capital improvements as listed in the City's 1999 - 2000 Approved Biennial Budget included 55 itemized projects in priority order. The first 54 projects have total estimated project costs of \$37,112,300. These projects were identified by street name, area, specific improvement or program and individually ranged from \$20,000 to almost \$8 million. These 54 projects, in the same priority ranking and with identical total estimated costs, were also included in the CIP list submitted to and approved by the County. The County funds only the estimated current year costs, which totaled \$14,716,000. Absent from the lists submitted to both the City and County was MSD's share of any costs for the eight joint WIB projects. The City's share of WIB costs was included in the City's 1999 budget as part of SMU's Drainage Correction/Improvements line item.

The City's 1999 CIP budget for MSD included an additional project as its 55<sup>th</sup> priority: \$25,000,000 for "Sewer Improvements." No additional description, location, or breakdown was presented. The County's budget resolution made no reference to this line item or amount. Current Sewers management could not

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<sup>31</sup> *Ibid.*, p. 3.

<sup>32</sup> City of Cincinnati Ord. No. 136-2000.

<sup>33</sup> City of Cincinnati Ord. No. 166-2000, Document #200000956.

explain what the \$25 million in sewer improvements represented or why it was not included in the CIP submitted to the County.

MSD's CIP projections for the City's 2000 budget, prepared in late 1998, are generalized on nine line items totaling almost \$64 million. By contrast, the Water Works' CIP budget projections for 2000, also prepared in late 1998 and totaling \$47 million, are specifically described in 43 line items.

MSD's CIP projections for the County's 2000 budget, prepared in late 1999, were specifically described in 57 line items totaling almost \$43 million, net of matching funds and assessment projects. Two of the eight joint WIB projects were included (Cedar Ave. and Toluca Ct.) with MSD's share of the costs. Although a year had lapsed between preparation of the 2000 projections submitted to the City and to the County, the \$21 million discrepancy was not explained or reconciled.

In the City's 2001 Approved Budget, MSD listed 57 projects totaling \$58,822,400 in priority order. This list was prepared about November 2000. The individual projects range from \$10,000 to \$9.5 million. In the County's 2001 CIP budget, MSD listed 85 projects totaling \$62,960,000, net of matching funds and assessment projects. This list was dated December 15, 2000. Project descriptions and priority ranking were not consistent with the CIP list submitted to the City. Other inconsistencies included:

- 34 projects on the City's list and the estimated project costs (+/- \$1,000) totaling \$30,586,100 were on the County's list (4 County projects were combined as 2 City projects).
- 5 projects on the City's list, totaling \$10,414,800, were not included on the County's list.
- 30 projects on the County's list, totaling \$7,191,000, were not included on the City's list.
- 7 projects on the City's list were included as 8 projects on the County's list, but the estimated costs were \$11,679,500 higher on the County's list.
- 11 projects on the City's list were included on the County's list, but the estimated costs were \$4,336,000 lower on the County's list.

Over a period of time, project selection and cost estimates are likely to change due to unanticipated circumstances such as different emerging priorities, difficulty obtaining landowner cooperation or easements, engineering updates, and escalation of construction costs. However, during the approximate 6-week period between the final preparation of the CIP list for each jurisdiction, 35 separate projects were added or eliminated from the CIP projections and costs for almost 1/3 (18/57) of the projects listed in the City's budget had changed. The quantity and magnitude of the changes from the City's CIP budget to the County's were not explained or reconciled. **Internal Audit recommends that MSD:**

- **Specifically identify in the City's CIP budget those projects that are jointly funded by the City.**
- **Specifically identify in the City's CIP budget MSD's share of costs of projects jointly funded by the City.**
- **Provide written explanation to the City's Budget Office for (1) the addition of specific projects to the City's CIP list that were not included in the County's CIP list and (2) the elimination of specific projects from the City's CIP list that were included in the County's CIP list.**
- **Provide written explanations or reconciliations for estimated costs for individual projects if those costs vary by +/- 5% between the City's and County's CIP lists.**
- **Submit a copy of its County-approved CIP to the City's Budget Office for the second year of the City's biennial budget.**
- **Ensure consistency between the City and County CIP lists when describing specific projects and assigning priority ranking.**

## Availability and Use of SMU Funds

As a restricted, enterprise fund, SMU's revenues are limited to its service charges and interest earned on cash on hand.<sup>34</sup> The formula and factors, which determine the amount of SMU's service charges, are established by City Council<sup>35</sup> and can be changed only by Council's official action. The operating revenue must cover SMU's operating expenses, including its debt service. Remaining funds are available for capital projects. (See the chart on the following page.)

SMU's income and operating expenses have remained fairly constant. Service charges generate approximately \$7.3 million a year with interest income generating the remainder. Operating expenses average about \$5.5 million and include:

- Contractual services of \$3.0 to \$3.5 million
- Debt service of approximately \$1.2 million
- Rent, materials, supplies, and vehicles ranging from \$180,00 to \$260,000
- Salaries of personnel, down from \$1 million to \$625,000 in 2000. While SMU had 26 authorized positions in its 2000 Table of Organization, only 14 of these positions were filled and 2.5 of these positions were applied solely to work reimbursable by MSD. In 2001, one of the 14 filled positions was transferred to MSD as part of the budget process.
- Fringes and other costs, down from \$365,000 in 1998 to \$219,000 in 2000.

SMU's Income, Expenses, and Capital Availability - Budgeted and Actual									
		1998		1999		2000		2001	2,002
		Budgeted	Actual <sup>1</sup>	Budgeted	Actual <sup>1</sup>	Budgeted	Actual <sup>1</sup>	Budgeted	Budgeted
Total Revenue		7,000,000	7,398,000	7,460,000	7,434,980	7,610,000	7,661,020	7,600,000	7,600,000
Expenses									
Personnel		1,085,860	1,070,007	1,120,340	1,021,061	832,660	623,878	831,558	
(Number of FTEs/filled positions)		(30)	(25)	(28)	(21)	(26)	(14) <sup>2</sup>	(22/12 <sup>3,4</sup> )	
Contractual Services <sup>5</sup>		2,962,210	2,942,963	2,983,180	2,972,819	3,644,800	3,477,171	3,568,880	
Materials, Supplies, Fixed Charges		202,680	177,713	213,300	198,162	316,300	246,211	146,730	
Vehicles		0	0	30,000	23,227	28,000	12,301	20,000	
Debt Service		1,121,300	1,121,019	1,386,970	1,106,722	1,316,200	1,316,189	1,208,900	
Fringes & General Overhead		409,370	365,356	313,860	281,254	293,320	218,722	193,090	
Total Operating Expenses		5,372,050	5,311,702	6,047,650	5,321,990	6,137,960	5,675,750	5,969,158	6,006,720
Excess of Income over Expenses		1,627,950	2,086,298	1,412,350	2,112,990	1,472,040	1,985,270	1,630,842	1,593,280
Less: Required Fund Reserve <sup>6</sup>		776,687	759,340	776,780	749,421	852,513	763,047	793,376	775,220
Available for Capital Projects		851,263	1,326,958	635,570	1,363,570	619,527	1,222,223	837,466	818,060
Capital Projects:									
Duck Creek		(See Note 8)				798,000	0 <sup>1</sup>	971,000	385,000
Barrier Dam & NPDES Compliance		(See Note 9)						100,000	100,000
WIBs and Joint Projects		(See Note 10)		1,800,000	(See Note 11)	260,000	1,906,392		
SMU Storm Drainage Corrections and Improvements		1,000,000	987,091	1,775,000	(See Note 11)	332,000	298,665	905,000	1,515,000

<sup>34</sup> \$5,565,126 was unspent as of 11/20/2000. Approximately \$1.5 million was reserved for the remaining WIB projects; \$1.5 million for the Covedale project; \$798,000 for Duck Creek/Army Corps of Engineers; \$200,000 for the county-wide stormwater study in conjunction with MSD; and \$294,000 for 2000 capital projects. Approximately \$1.3 million was unspent and available for reprogramming.

<sup>35</sup> CMC Chapter 720.

		<sup>4</sup> One person was transferred from SMU to MSD without notice to SMU.						
		<sup>5</sup> All years are similar. Detailed amounts estimated for 2001 include:						
		Sewer repairs	1,400,000					
		Cleaning sewers and intakes	610,000					
		Mill Creek Valley Conservancy	415,000					
		CWW billing services	415,000					
		RCC charges	225,000					
		Consulting/Barrier Dam	227,000					
		Utilities	98,000					
		MSD administrative charges	75,000					
		Other	103,880					
		<sup>6</sup> 60 days of operating budget less debt service						
		<sup>7</sup> Not yet invoiced by the US Army Corps of Engineers						
		<sup>8</sup> \$804,000 was available before 1998.						
		<sup>9</sup> \$361,059 was available before 1998.						
		<sup>10</sup> \$1,000,000 was available in 1996.						
		<sup>11</sup> \$1,932,365 was spent or encumbered. A breakdown between these two major categories is not available.						

In addition to the operating expenses, the Finance Department recommends that SMU maintain an operating fund reserve in the amount equal to 60 days of operating costs. Thus, until 2001, SMU had approximately \$1.3 million in current revenue available each year to devote to all its capital projects. Only about \$825,000 of current revenue is expected to be available this year and next. However, much of the current revenue available for capital projects each year has already been committed:

- The Duck Creek Project will protect 35 structures in the City and Fairfax against a 100-year storm. SMU will pay the US Army Corps of Engineers 25% of total costs originally estimated at \$16.7 million. As the total costs have soared to over \$36.3 million, increasing local liability from \$4.2 million to over \$9 million, SMU management, the Director of Sewers, the City Manager, and our Congressional liaison, working through our federal representatives, have secured the passage of legislation capping the total local liability at \$4.2 million, of which \$3.3 million is the City's share. \$804,000 of SMU's capital funds was set aside before 1998 for this work; \$798,000 was earmarked in 2000; and \$971,000 has been set aside in 2001. Additional funds of approximately \$680,000 will be required in future years.
- The upgrading of the Barrier Dam and other work to comply with NPDES requirements. \$100,000 is budgeted for 2001 and 2002; \$750,000 is budgeted for 2003 and 2004 combined.
- Cost-sharing projects with MSD may require additional contributions from the City. (1) The Covedale project was originally estimated to cost about \$4.4 million with the City contributing half. Another \$260,000 contribution from the City was required in 2000 and the project is not complete. (2a) Of the two completed WIB projects, the City's share of Tweed & Wakefield was estimated originally at \$213,000, using the estimates initially provided to Council. Actual costs to the City are approximately \$291,500. The City's share of costs for the Cedar Avenue project was estimated originally at \$192,500; the City's actual financial exposure is \$241,200. Thus, actual expenses for these two completed projects are \$127,200 above the original estimates. (2b) Using the estimates initially provided to the County, the Tweed & Wakefield costs are \$78,200 under budget and the costs for the Cedar Avenue project are \$46,050 over budget, netting \$32,150 in savings. Two other projects are in progress. MSD had scheduled the four remaining projects to begin in each of the next four years, but dropped two of these projects this year.<sup>36</sup> SMU's costs for the six WIB projects are now estimated to range from \$1.8 to \$3.1 million.

As a consequence, SMU averaged about \$1 million per year in current revenue available for stormwater drainage improvements and corrections. Only \$332,000 was available and appropriated for 2000. \$905,000 was appropriated for 2001. The 1992 SWIM report identified 766 capital projects with an estimated cost a decade ago of \$118.6 million. Almost all of these projects still need to be done.

<sup>36</sup> (1) Bethesda Hospital closed. When the landowner determines a future use for the property, improvements to that sewer will be reconsidered. (2) Northbend/Harrison/Wardall was determined to be outside Cincinnati corporate limits.

Internal Audit tried to determine the amount of money expended on SMU's capital projects, particularly its drainage improvement and correction projects. Capital costs, including in-house personnel costs that are appropriate for capitalization, should be tracked and analyzed by project to identify total costs, cost escalation, future estimated costs, and contractors' performance. Neither SMU/Sewers management nor the City's Finance Department was able to provide Internal Audit with capital costs expended by year or to date for any specific capital project prior to 2000.<sup>37</sup> The former Budget Analyst for SMU reported that SMU management requested identification, budget, and expense data on prior SMU capital projects when he first assumed his duties, but the City Budget Office did not have them. Costs incurred for specific SMU capital projects prior to 2000 were grouped and accounted for by the year in which they were funded. To improve its management information and reporting ability, in 2000 SMU began tracking costs incurred on a project by project basis. **Internal Audit recommends that SMU recover cost data for specific SMU capital projects since January 1, 1995.**

### **Activities of SMU employees**

SMU employees accounted for their working hours for each pay period. Paper timesheets for all employees for each pay period were available. Internal Audit reviewed the timesheets for SMU employees for 1998 through 2000. Data captured on the timesheets included an activity code and/or a description or location of an activity or project. All locations for SMU work were within City limits.

SMU employees used more than 450 activity codes or descriptions on their timesheets. Activity coding was generally consistent for each employee from pay period to pay period. However, employees frequently recorded their activities with unassigned codes, "umbrella" codes, or with codes that were inconsistent with the employees' written description of the activity. SMU management identified less than 80 valid activity codes or descriptions.

SMU reported that its activity coding system was developed many years ago. Individuals appear to have made unofficial modifications to the system in response to current situations, but those modifications, while generally appropriate for the activity described, were not used by other employees with similar activities. Consistent recording, reporting, and tracking of employees' time permit more accurate analysis of project costs. **Internal Audit recommends that SMU (1) update the activity codes of its timekeeping system; (2) distribute the updated codes to and train all SMU employees and other Sewer Department employees working on SMU projects; and (3) computerize timekeeping data entry.**

In addition to their work for SMU, SMU employees reported working on other Sewer Department projects or activities. SMU interdepartmentally billed MSD, and MSD reimbursed SMU, for 5,028 hours. These hours include one Administrative Assistant and a Civil Engineering Technician IV.

Similarly, other Sewer Department employees have worked on SMU projects. Since the fourth quarter of 1999, MSD has billed, and was reimbursed by, SMU for all hours including overtime<sup>38</sup> that other Sewer Department employees performed SMU work. Although timesheets are attached to these billings, the itemized billings do not indicate the SMU project or activity for which the work was performed. **Internal Audit recommends that (1) Sewers indicate on its intradepartmental billings the SMU activity code for the hours charged and (2) both Sewers and SMU transmit the itemized billing data to the other in an electronic format.**

Pursuant to the MOUs between the City and Hamilton County, since 1996 MSD has been authorized to bill SMU each year for an additional 1,040 administrative hours, plus fringes. This reflects a percentage of the time of the MSD/Sewer Department Director (20%), Deputy Director (20%), and the Superintendent of Administration (10%). Payment of these bills since January 1998 has been verified.

<sup>37</sup> The current Director of Sewers, the Deputy Director of Sewers, and the Superintendent of SMU assumed their responsibilities in 1999.

<sup>38</sup> In addition to the inconsistent treatment of overtime hours by SMU and MSD for intradepartmental billing purposes, SMU and MSD should agree how to equitably reimburse the other for non-productive time and fringes when 50 - 100% of an employee's time is billed to the other fund.

As contemplated by the MOUs, the merger of similar service functions between SMU and MSD should produce joint efficiencies. Management of the Sewer Department has moved away from defining SMU in terms of the number of staff to setting SMU goals and targets, independent of staff, and drawing from the Sewers Department as a whole to meet those goals. However, sufficient human resources, from any source, must be available and timely applied to achieve those goals and targets.

Internal Audit categorized the hours reported by SMU employees or billed by MSD as follows:

- SMU program oriented (SMU planning and design, including engineering and plan reviews, and SMU operations and maintenance, including contract administration, inspecting, and complaint response)
- SMU administration (managing, clerical, accounting, and computer support)
- SMU training and meetings
- MSD program oriented
- MSD administration
- MSD training and meetings
- Non-productive time (vacations, holidays, sick days, comp time used, and other paid or unpaid leave time)

The results of this categorization are presented on the chart below and indicate:

- In two years, total hours have been cut by almost 40%, a decrease of about 10 FTEs.
- In two years, the hours expended for SMU programs have decreased by almost 50%.
- Since 1999, SMU employees have increased the number of hours spent on MSD activities by more than 320%.

	<u>SMU Hours</u>		
	<u>1998</u>	<u>1999</u>	<u>2000</u>
SMU Program oriented	18,147.70	13,668.00	7,743.50
Billed by MSD/Sewers		*327.00	1,814.10
WIB Projects	16.00	42.50	118.00
SMU Administration	23,198.75	19,342.65	11,251.90
Billed by MSD/Sewers	1,004.00	1,000.00	**1,567.00
SMU Training	1,374.50	924.00	478.75
SMU Meetings	922.00	470.30	266.75
MSD Program oriented	77.00	787.10	3,015.50
MSD Administration		572.85	1,720.70
MSD Training & Meetings		125.00	35.60
Non-productive	6,985.55	6,254.45	4,738.10
Undeterminable/not accounted for	39.00	173.50	15.00
Totals	51,764.50	43,360.35	31,197.90

\*4th Qtr only

\*\* Includes 1,040 hours as provided in the MOUs with hours billed by other Sewer Department employees

The loss of personnel continues. As part of the 2001 - 2002 budget process, one filled SMU position was transferred to Sewers. In April 2001, Sewers transferred an additional person from SMU to another

division within the Sewer Department. This transfer was processed without prior notification to SMU management.

Lower than average rainfall, the loss of personnel due to transfers and long-term injury, and the application of some current personnel to other Sewer Department work has adversely affected the accomplishment of SMU goals. SMU's Operations and Maintenance (O&M) section is responsible for inspection and supervision of the cleaning, maintenance, and repair of inlets, intakes, ditches, and manholes. Its Planning and Design (P&D) section is responsible for the engineering design work for its capital projects.

SMU's O&M section has identified 26,000<sup>39</sup> structures that should be inspected routinely. Proactive inspection and preventive maintenance should be standard procedure. In 1996, the inlet inspection and cleaning cycle was slightly more than once every two years.

Some individual units require more frequent cleaning, others can tolerate less. However, as a general rule, in densely populated urban areas like Cincinnati, preventive levels of routine maintenance necessitate an average inlet cleaning frequency of once per year with some problematic facilities requiring quarterly or even more frequent cleaning.<sup>40</sup>

Prior SMU administration increased the inspection cycle up from two to three years for the 26,000 structures. For 35,000 structures, the cycle is now up to four years at the current rate. Performance statistics for SMU's O&M section are presented below.

Complaints of flooding or sewer problems generate most of O&M's service requests. Rainfall generates complaints. Lower than average rainfall for the last two years resulted in fewer complaints and fewer service requests.

Statistics for SMU's O&M Section							
	Inventory	1998	1999	2000	Target 2000	Target 2001	
Service Requests Investigated		1,577	1,025	926	1,500	N/R	
Routine Maintenance Items							
Inlets and sag inlets cleaned	26,000 <sup>39</sup>	6,387	9,111	8,971	9,000	9,000	
Intakes cleaned - small (<24")	400	427	328	210	400	400	
Intakes cleaned - large	50	46	6	21	20	20	
Concrete ditch - cleaned (lineal ft.)	*2,904,000	9,241	8,826	10,480	10,000	*15,000	
Earthen ditch - cleaned/shaped (lineal ft.)	*	5,800	1,275	1,273	5,000	*	
Remedial Maintenance Items							
Inlets converted/constructed	26,000 <sup>39</sup>	231	232	145	250	350	
Inlets repaired/rebuilt	26,000 <sup>39</sup>	331	229	192	250	250	
Conduit repaired/constructed (lineal ft.)	1,320,000	1,242	877	506	1,000	2,000	
Manholes - repaired/constructed	1,000	13	6	10	15	15	
Headwall/wingwall - repaired/constructed	N/R	1	3	2	5	N/R	
Asphalt ditch - lined (lineal ft.)	N/R	4,911	3,569	1,132	4,000	N/R	
Asphalt curb - repaired/constructed (lineal ft.)	N/R	1,340	475	1,213	2,000	N/R	
N/R - Not reported							
*Concrete and earthen ditch amounts combined							

All 450 intakes are inspected twice a year, once in the spring and in the fall. During each inspection cycle, O&M estimates that 200 intakes will need to be cleaned (400 per year). During 2000, the spring inspection cycle was not completed due to the long-term injury of the SMU technician normally assigned

<sup>39</sup> As a result of information obtained through CAGIS, Sewers estimates there are about 35,000 structures.

<sup>40</sup> Cost of Service Analysis, *supra*, p. 23-24.

to this activity. A technician from another Sewers division was temporarily assigned as needed to assist with more critical duties, such as service request follow-ups and construction inspection. Consequently, preventive maintenance duties were not completed as planned and performance targets were not met. Efficiencies cannot be realized if goals are not met due to the loss of available, trained personnel.

Historically, SMU contracted with the Highway Maintenance Division (HMD), Employment & Training Division (E&T), and a contingency contractor to perform routine and remedial maintenance activities. Sewers reported that HMD and E&T provided little to no feedback regarding the structural condition of inlets cleaned. SMU field inspectors performed visual spot checks to provide some level of quality assurance, but storm connector pipes were not inspected. Cave-ins or localized flooding provided the only indications of trouble. No record of specific facility maintenance has been available.

To improve inspection quality and to document routine maintenance, the Wastewater Collection Division of the Sewers Department implemented a computerized Storm Sewer and Appurtenance Inspection Program. The equipment, with costs of approximately \$15,000, consists of a closed circuit digital "camera on a stick" connected to a laptop computer operated by a two-person team. The condition of inlets and storm connector pipes can be easily determined and electronically captured. Service orders can be immediately prepared and assigned to a specific contract.

Data generated from the first four months of implementation suggest:

- Visual inspections by SMU field inspectors or HMD and E&T staff are not as thorough as a camera on a stick equipped with built-in lights and a powerful zoom feature.
- 38% of storm appurtenances inspected under this program require emergency maintenance; 43% require emergency repair.
- 20% of storm sewers require emergency maintenance; 21% require emergency repair.
- The cost of the work required to remedy emergency maintenance and repair conditions identified this year is likely to exceed the budgeted amount by more than \$1.5 million.
- The projected cost of the work required to remedy emergency maintenance and repair conditions for the entire stormwater system within the City exceeds \$23.5 million.

The Sewers Department reported that when fully deployed, this program will prioritize the O&M workload, but it will take about five and a half years to inspect every structure. **To halve the initial inspection time of the Storm Sewer and Appurtenance Inspection Program and to effect more thorough, current inspection outcomes, Internal Audit recommends that SMU invest approximately \$15,000 in a second set of equipment. Internal Audit also recommends that Sewers management assure the availability of sufficient and trained personnel to operate the equipment at the optimum level.**

SMU management reported that its Planning and Design (P&D) section did not have sufficient engineering capacity available in 2000 to accomplish the necessary design work for its capital projects. The single SMU engineer, employed as a Supervising Engineer and supervised by Sewers' Superintendent of its Wastewater Engineering Division (WWE), is responsible for the planning and design work for all SMU's capital budget projects and the design of any work required for SMU's O&M section. He has one Civil Engineering Technician II to assist him. In 1995, one Supervising Engineer, two Senior Engineers, and eight Civil Engineering Technicians, ranging from level I to V, were employed to respond to SMU's design workload. The unfunded backlog of projects has not appreciably changed. Conversely, Sewers' management suggested that SMU could increase the number of capital projects started by working through Sewers' Wastewater Engineering staff or by outsourcing the initial engineering planning and design work. Internal Audit interviewed Sewers' WWE Superintendent who reported:

- SMU's Supervising Engineer is deployed almost solely on SMU work. A very limited amount of time has been charged to MSD for work done on the joint SMU/MSD projects.
- Six of the WWE Senior Engineers are almost fully deployed doing Sewers' work, including in-house design work (Design Section) or preparing plans for outsourced design work (Planning Section). This work is combined with varying degrees of other engineering assignments and



some limited SMU work. A recently hired Senior Engineer is expected to join WWE's Planning Section this May.

- WWE has requested hiring three additional Senior Engineers to ease the workload for both SMU and Sewers engineers.
- WWE's in-house design staff of three engineers can complete designs on about 12 mid-sized projects (\$500,000 to \$1 million) a year.
- WWE's planning staff of two Senior and two Supervising Engineers should be able to outsource the design work for about 40 funded projects a year.
- Current Sewers' management has instituted a priority ranking system for MSD's capital projects. A Senior Engineer in Sewers' Planning group is primarily responsible for managing this system, developed with the facilitation of Sewers' Deputy Director. Setting the priority of SMU projects is separate, although it is anticipated that these projects will be priority ranked to be compatible with the MSD system in the future. Some modification of the ranking system is expected to be necessary if or when it is implemented for SMU's projects.

The WWE Superintendent described his years of using outside consultants for design work, focusing on the benefits and risks. In general, he found outside consultants have the expertise for designing the very large projects (\$1+ million), especially wastewater treatment plant facilities, but are less beneficial for small sewer design projects (less than \$500,000 and most of SMU's capital drainage correction and improvement projects). He reported that most design firms seem to lack the specific expertise available from long-term WWE staff and to have higher employee turnover of those staff assigned to smaller projects, resulting in additional input from WWE staff. The work products of most consultants for small projects usually require a high level of in-house staff time to review, correct, and put them in final form, ready to send out for construction bids. The WWE Superintendent recommended that engineering design work for small projects remain in-house, while recognizing a need for consultants to handle peak loads beyond a reasonable staffing level. Internal Audit supports this conclusion. However, sufficient in-house engineering capacity (1) for small projects or (2) to ready projects for engineering bids must not only exist but also must be accessible and integrate SMU's priorities. To provide this accessibility and integration, Sewers' management is holding the WWE Superintendent accountable for completing at least 85% of SMU's funded capital projects for this year.

### **Scope and Methodology**

Internal Audit analyzed the relationship between SMU as a departmental division and the Department of Sewers as the accountable organization and the impact of this structure on SMU's mission and goals. We focused our attention on SMU's capital projects and the activities of its employees to determine whether:

- the capital projects, and funding therefor, were authorized through appropriate legislation or in compliance with contractual provisions and
- appropriate controls were in place and operating to promote the achievement of divisional goals.

To develop an understanding of the historical context, Internal Audit reviewed and analyzed the 1968 Agreement, Memoranda of Understanding, reports of the former Department of Public Services/Division of Engineering, Council ordinances, relevant sections of the Cincinnati Municipal Code and Administrative Code, and proposed management plans for SMU. We interviewed the current Superintendent of SMU who was on SMU's staff during its early stages.

To identify SMU's capital projects and the associated expenses, we requested and received a listing of the projects from SMU. We surveyed the database of Council's actions maintained by the Clerk of Council. We reviewed City CAFRs, ordinances, Council resolutions and motions, reports to Council or Council committees, communications to Council, and records maintained by the Budget Office and

Accounts and Audits. We compared SMU's budget requests and approved budgets to County budget resolutions and their attachments. We quantified discrepancies. We reviewed project cost estimates prepared by the Department of Sewers. We interviewed the Deputy Director of Sewers, the Superintendent of SMU, the Deputy Director of Finance, the City Treasurer, staff of Accounts and Audits, and current and former Budget Analysts.

For capital projects funded jointly by Hamilton County/MSD, we traced the authorizing legislation and reviewed the contracts between the City and the County for individual projects. We compared the County Commissioners' resolutions and Council's ordinances authorizing the contracts (except as noted in the report). We obtained a legal opinion from the Solicitor's Office regarding the sufficiency of authority for the Tweed & Wakefield project. We verified compliance with arbitrage requirements for debt-financed projects.

Internal Audit analyzed SMU's revenues and expenses for the last three years to determine the availability of funds for capital projects.

To analyze the activities of SMU employees, Internal Audit created a spreadsheet from information reported on SMU timesheets for 1998 through 2000. The data were sorted and analyzed to determine:

- the nature or description of work performed
- which enterprise fund (SMU or Sewers) benefited from the work performed
- the location of the work performed
- the hours charged, and
- data trends.

When the activity code indicated was inconsistent with the written description on the timesheets, Internal Audit considered the written description to be the official activity reported. We verified that all locations were within City corporate limits for activities or projects charged to the SMU fund.

Internal Audit compared the list of reported activity/project codes to SMU's coding system and interviewed the Superintendent of SMU to reconcile or explain differences.

Internal Audit reviewed the mission statements and goals of SMU as a division and those of the Sewers Department as they related to SMU. We compared these to performance, status, and statistical reports maintained by SMU and Sewers and analyzed differences. We interviewed the Deputy Director of Sewers; the Superintendents of SMU, Wastewater Engineering, and Wastewater Collection; and SMU's Supervising Engineer. We reviewed and compared the performance targets of the three Superintendents.

We conducted our fieldwork in October 2000 and from January through May 2001. Our audit was conducted in accordance with generally accepted government auditing standards.

APPROVED:

John F. Shirey  
City Manager